

## CLAIMS

What is claimed is:

1. A motor vehicle comprising:
  - an axle assembly;
  - a plurality of sensors adapted to send signals to a controller, said controller adapted to determine the rotational parameters of an axle within said axle assembly; and
  - an exciter ring assembly including an exciter ring coupled to rotate with said axle, said exciter ring having an annular lip protruding about the circumference of a first end of said ring, said ring having an aperture to accommodate the shaft of said axle, said ring having teeth extending axially along a second end of said ring, said sensor positioned to detect said teeth of said exciter ring.
    - an outer member concentric to said lip, adapted to restrain the radially projecting annular surfaces of either annular end of said lip, said outer member fixed within said axle assembly.
2. The vehicle of Claim 1 wherein an elastomer insert is attached to the interior surface of said exciter ring and contacting said axle to restrain the relative rotation between said exciter ring and said axle.

3. The vehicle of Claim 2 wherein said exciter ring includes a means for promoting oil flow within an axle tube in the region of said exciter ring assembly including channels within the interior surface of said elastomer insert to enable oil to pass from a first axial end of said exciter ring assembly to a second axial end of said exciter ring assembly.

4. The vehicle of Claim 1 wherein said outer member includes recesses in the circumferential surface, said recesses enable oil flow past said exciter ring assembly.

5. The vehicle of Claim 1 wherein said outer member includes cutouts in the circumferential surface, said cutouts enable oil flow past said exciter ring assembly.

6. An axle assembly comprising:

- an axle tube;
- an axle passing through a section of said axle tube;
- an inner bore within said axle tube;
- a sensing means for detecting rotational parameters of said axle; and
- an exciter ring assembly press fit into said inner bore comprising:
  - an exciter ring with an annular lip protruding about the circumference of a first end of said exciter ring, said exciter ring having a coaxial bore to accommodate the diameter of said axle, said exciter ring having axial teeth extending radially along a second end of said exciter ring, said sensing means positioned to detect said teeth of said exciter ring; and
  - an outer member concentric to said lip, adapted to restrain the radially projecting annular surfaces of either annular end of said lip, said outer member adapted to an interference fit with said inner bore.

7. The axle assembly of Claim 6 wherein an elastomer insert is attached to the interior surface of said exciter ring and contacting said axle to restrain the relative rotation between said exciter ring and said axle.

8. The axle assembly of Claim 7 wherein said exciter ring includes a means for enabling oil flow within said axle tube in the region of said exciter ring assembly including channels within said interior surface of said elastomer insert to enable oil to pass from a first axial end of said exciter ring assembly to a second axial end of said exciter ring assembly.

9. The axle assembly of Claim 6 wherein said outer member includes recesses in the circumferential surface, said recesses enable oil flow past said exciter ring assembly.

10. The axle assembly of Claim 6 wherein said outer member includes cutouts in the circumferential surface, said cutouts enable oil flow past said exciter ring assembly.

11. An exciter ring assembly comprising:  
an exciter ring with an annular lip protruding about the circumference of a first end of said exciter ring, said exciter ring having a coaxial bore to accommodate the diameter of an axle, said exciter ring having radial teeth extending axially along a second end of said exciter ring, said lip having a first radially projecting annular end surface and a second radially projecting annular end surface; and

an outer member concentric to said lip, said outer member restraining said first and second annular surfaces of said lip, said outer member adapted to be restrained relative to rotation of said axle.

12 The exciter ring assembly of Claim 11 wherein an elastomer insert is attached to the interior surface of said exciter ring and contacting said axle to restrain the relative rotation between said exciter ring and said axle.

13. The exciter ring assembly of Claim 12 wherein said exciter ring includes a means for promoting oil flow within an axle tube in the region of said exciter ring assembly comprising channels within said interior surface of said elastomer insert to enable oil to pass from a first axial end of said exciter ring assembly to a second axial end of said exciter ring assembly.

14. The exciter ring assembly of Claim 11 wherein said outer member includes recesses in the circumferential surface, said recesses enable oil flow past said exciter ring assembly.

15. The exciter ring assembly of Claim 11 wherein said outer member includes cutouts in the circumferential surface, said cutouts enable oil flow past said exciter ring assembly.

16. The exciter ring assembly of Claim 11 including a spacer located within said outer member.

17. The exciter ring assembly of Claim 16 wherein said spacer includes outside apertures to enable oil flow.

18. The exciter ring assembly of Claim 16 wherein said spacer includes inside apertures to enable oil flow.

19. An exciter ring comprising an annular lip protruding about the circumference of a first end of said exciter ring, said exciter ring having a coaxial bore to accommodate the diameter of an axle, said exciter ring having radial teeth extending axially along a second end of said exciter ring, said lip having a first annular end surface and a second annular end surface and a outer circumferential surface.

20. The exciter ring of Claim 19 wherein said annular lip is rotatably coupled with an outer member, said outer member restraining axial movement of said exciter ring, said outer member having an axial length less than said exciter ring.

21. The exciter ring of Claim 19 wherein an elastomer insert is attached to the interior surface of said exciter ring and contacting said axle to restrain relative rotation between said exciter ring and said axle.

22. The exciter ring of Claim 21 wherein said exciter ring includes a means for promoting oil flow within an axle tube in the region of said exciter ring comprising channels within said elastomer insert to enable oil to pass from a first end of said exciter ring to a second end of said exciter ring.

23. The outer member of Claim 20 wherein said outer member includes recesses in said outer circumferential surface, said recesses enable oil flow past said outer member.

24. The outer member of Claim 20 wherein said outer member includes cutouts in said outer circumferential surface, said cutouts enable oil flow past said outer member.

25. The exciter ring of Claim 20 including a spacer located within said outer member.

26. The exciter ring of Claim 25 wherein said spacer includes outside apertures to enable oil flow.

27. The exciter ring of Claim 25 wherein said spacer includes inside apertures to enable oil flow.